WIMPs are Not Dead

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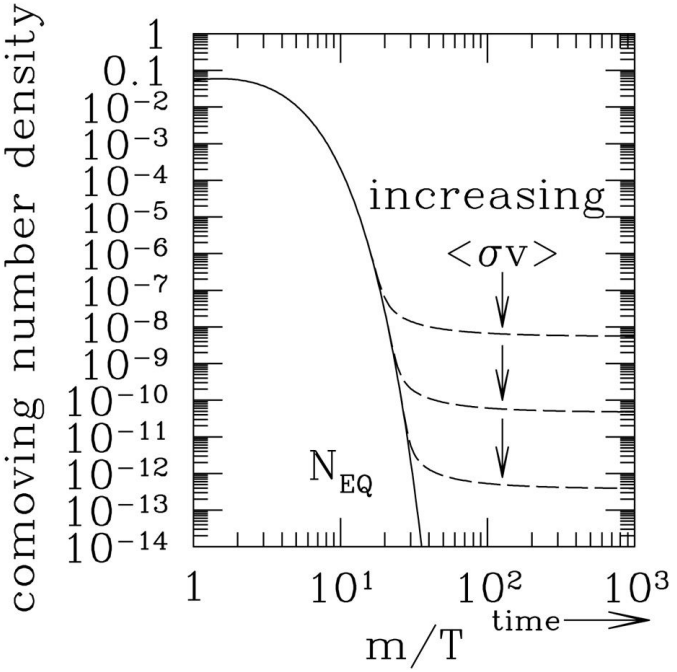
P5 Townhall
3/23/23

LA-UR-23-22862

WIMP Dark Matter

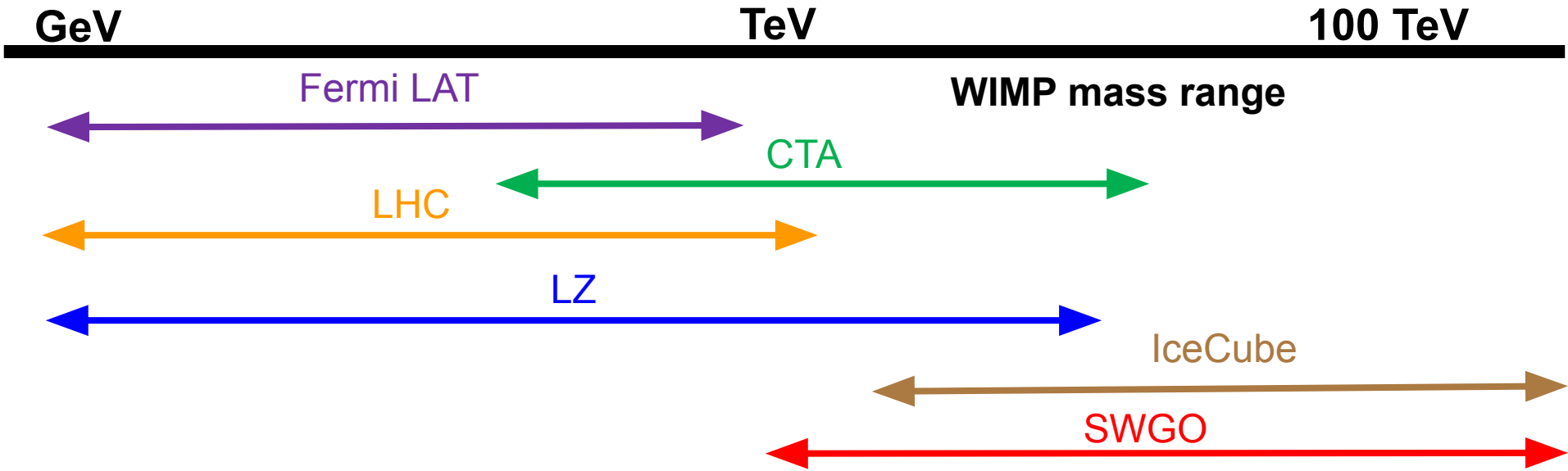
- Weakly Interacting Massive Particle (WIMP)
  - 5 GeV - 100 TeV mass scale
- A thermally-coupled ~100 GeV particle in the early Universe with weak scale σ_{ann} independently produces the observed dark matter abundance today measured by the CMB
- Several WIMP candidates from independently motivated theories like SUSY
- Thermal WIMPs aren't the only dark matter candidates, but are a **well-motivated hypothesis we must test!**
  - We have only just begun to probe WIMP phase space



E. Kolb and M. Turner, *The Early Universe*, Westview Press (1994)

- Diverse experimental portfolio is needed to cover all of the thermal WIMP mass range
  - This includes small and mid-scale experiments

- Direct detection (e.g. LZ), indirect detection (e.g. SWGO), and collider production (e.g. LHC) are *all needed* to probe the full mass range and various particle interaction channels



For example, future indirect detection of cosmic gamma rays is expected to probe the entire thermal WIMP mass range with continued observations with the Fermi LAT, and the next generation gamma-ray observatories CTA and SWGO